

**Questions and Issues for Consideration by Advisory Committee
Submitted by Management and Mitigation Subcommittee**

1. Risk Assessment

***What can be done in addition to what is done now? What should be done??**

- Current Applications of Risk Assessment
 - Use standards of acceptable risk in MMPA and ESA, which differ (e.g., negligible impact, small numbers, jeopardy, etc.)
 - Legal questions and litigation have arisen re: negligible impact, small numbers, specific geographic area, etc.
- Are clarifications possible without statutory changes?
 - Not all Subcommittee members are comfortable with prospect of statutory changes; some fear revision will result in statutes that are less protective
- Do statutes need to be clarified or revised to address the following issues?
 - Complexity of implementing current standards for acceptable risk
 - Conflicting interpretations of statutory definitions of acceptable risk
- Some potential approaches to dealing with the complexity of implementing current legal definitions of acceptable risk:
 1. Prescriptive, e.g., develop PBR approach that would allow consideration of cumulative impacts, and would require statutory change
 2. Require that all permit applicants conduct risk assessments and provide their risk assessment models with all assumptions for regulatory review. Leave flexibility with regulators.
 3. Improve modeling to supplement limited empirical information. Conduct real-world validation/corroboration studies, and use adaptive management strategies to allow feedback, etc.
 4. Improve transparency about assumptions underlying models used to make decisions. Move toward quantitative risk assessments as the “state of the art” in regulation. Define, describe, and quantify uncertainties.
 5. Employ alternative decision-making tools (e.g., expert panels, expert opinion, stakeholder negotiations, management review processes, etc.). Retain a variety of options, but consider context of specific cases in determining appropriate approaches.

Potential recommendations re: risk assessment

1. Risk assessment is an important step in management system
2. Systems needs to become more quantitative – Work to quantify the uncertainties and improve the state of the art
3. Risk assessments must increase in transparency about the risk assessment process and the resulting findings, as well as about how precaution is built into the assessment
4. Improve risk assessment models to increase transparency about their assumptions
5. Validate models

6. Examine the adequacy of risk assessments after an activity goes forward (e.g., verify number of species present and sound propagation model) and use the information to improve mitigation (e.g., through adaptive management practices).
7. Risk assessments may not be meaningful or appropriate in all cases (e.g., where information not available for a species).

1. Adequacy of Current Statutes to Address Management and Mitigation

Are current statutes adequate? Is there a problem with the legal standards, their implementation, or both? Are there opportunities to improve them?

All activities carried out by U.S. entities that have potential to cause takes are subject to statutory requirements (i.e., moratorium on takings), except for commercial fishing (exempted through its own statutory requirements) and activities carried out by international actors within US waters. There is also a lack of clarity about the application of U.S. statutes to activities carried out by U.S. entities within the waters of other countries.

Precaution is built in at two levels through the MMPA:

- Negligible impact standard
- Least practicable adverse impact standard

Standards for acceptable risk might be improved through statutory changes, though all Subcommittee members do not agree that statutory change is desirable or would be effective in addressing management issues.

Enforcement of current statutes is not adequate.

MMPA reauthorization will probably be taken up in coming year, and the reauthorization discussions will probably overlap with the Advisory Committee activities.

***Should Subcommittee/Advisory Committee try to come to agreement on whether statutory improvements are necessary?**

3. “Unaddressed” and Unregulated Sound Activities

The Subcommittee discussed certain sound-producing activities as being “unaddressed” in the current statute. These include commercial fishing, activities carried out by international actors, and activities carried out by US actors in the waters of other nations. In addition, the Subcommittee discussed certain sound-producing activities as being “unregulated,” meaning that, for whatever reason, statutory requirements have not been implemented through regulation. Shipping noise is an example of an unregulated activity. Activities may not be actively managed through regulatory system (i.e., are “unregulated”) for a variety of reasons:

- They may not be easy to regulate (e.g., multiple diffuse sources such as commercial shipping)
- Impacts may not be seen as important by the public
- There may be no known impacts, or the impacts may be poorly understood

- The impacts may not be defined as a high priority for management (e.g. they are not acute)
- There is a lack of jurisdictional clarity and capability (who is responsible for regulating, where?)
- Design of statutes does not deal well with differences between point- and non-point (mobile, diffuse) sources of sound
- Agency resources are limited, and the current trigger for implementing regulations is a request for authorization from a user group

***What could be done to improve regulation of all impacts?**

1. Determine which unaddressed and unregulated activities have the potential to cause impacts that violate MMPA
2. Determine who has responsibility for the activities and the regulation of those activities
3. Develop outreach and education:
 - Encourage user groups to analyze activities and possible impacts
 - Educate user groups about requirements of MMPA and ESA
4. Develop mechanism to address unaddressed and unregulated sources, possibly through:
 - Conditions of port entry
 - Habitat protection efforts
 - “Total Maximum Daily Load (TMDL) approach to address multiple source components of ambient sound
 - Increased sophistication of tools will be needed to take these initiatives

4. Acceptable Risk

Currently, acceptable levels of risk are statutorily defined as small numbers and/or a negligible impact on a population, with measures to produce the least practicable adverse impacts required of all activities that are authorized.

While management efforts focus on these population-level standards, some groups are concerned about individual impacts as well. In some cases, individual marine mammals may be the target of concern:

- Focus at the individual level is important for enforcement efforts in order to identify impacts, because population-level impacts are difficult to detect
- Individual animal well-being is often an important value for the public, especially where harm is preventable, or the risk of harm to individuals can be greatly reduced

***Should the Advisory Committee try to provide guidance to Congress on this issue?
What guidance could be developed?**

5. Mitigation Effectiveness

***What can managers do to deal with the fact that some mitigation measures are not effective in certain situations?**

Options

1. Develop methodologies for assessing effectiveness.
2. Evaluate effectiveness while applying the mitigation measures.
3. Build research and reporting requirements into regulations and authorizations, and improve/standardize observer and reporting methods
4. Employ techniques that include precaution and address impacts, such as behavioral disturbance, that may lead to acute impacts
5. Continue research to define what constitutes a take (e.g., what exposure level causes a take?)
6. Evaluate the extent to which a measure prevents takes (e.g., under what conditions can observers be used?)
7. Use current mitigation measures until have something better.
8. Use integrated combinations of mitigation techniques that may be adequate
 - a. Recommend suites of tools that will get to desired goal
 - b. Develop best practices (e.g., for night activities, observers not adequate so must also use PAM) What can we say about which are best in which cases?
9. Identify which mitigation methods have likely benefit with some level of certainty, and use that as a criteria for mitigation requirements.
10. Decide whether/how existing measures can/should be applied in light of their limitations
11. Can we delineate the costs and benefits of various measures? Can we delineate which tools have the highest benefit with low or medium cost?

6. Precautionary Approaches (See draft text in Attachment 1)

***What should be recommended on this topic?**

The Subcommittee agreed that the attached draft text is a useful starting point for discussion. It includes the definition of the US Commission on Ocean Policy. The Advisory Committee should discuss what this draft language would mean for actual real-world practice, including examples of where additional precaution may be needed.

Options for addressing this topic in report

1. Show how precaution is used in case-specific risk assessments. Be explicit about how precaution is applied in management.
2. Discuss the extent and feasibility of using precautionary approaches in current risk assessment efforts.
3. Discuss how questions about scale of impacts over time and space are reflected in risk assessment processes and precaution?

7. Adaptive Management

***Do current practices with respect to adaptive management need to change?**

Adaptive management might be defined as the cyclical process of systematically testing assumptions, generating learning by evaluating the results of such testing, and further revising and improving management practices. While adaptive management approaches may be beneficial in a variety of ways, they may not be appropriate in all cases. Furthermore,

there are concerns about the details of real-world application and practice of adaptive management, including:

1. Adaptive management approaches are not currently used on case-by-case basis due to resource limitations in regulatory agencies
2. The implementation of adaptive management could be improved. For example, feedback mechanisms could be more systematic, and more thoroughly used and analyzed.
3. Adaptive management requires filling data gaps with research and collecting better baseline information. "Baselines" are difficult to define and may include some effects from preexisting anthropogenic impacts.
4. Evaluation of mitigation effectiveness for sound producing activities should be an ongoing adaptive management objective.
5. When applying adaptive management approaches, the level of uncertainty needs to be considered and quantified.
6. Adaptive management may not be precautionary enough in the views of some stakeholders.

8. Extent and Nature of Problem of Anthropogenic Sound and Marine Mammals

Is the goal of the management system to reduce overall levels of the anthropogenic component of ambient noise in the marine environment, which may have effects on marine mammals over the long or short term, or to address specific impacts from specific activities that are known to harm marine mammals, or both? Chronic impacts may present greater risk; acute impacts are the current focus of the regulatory system.

Congress has asked Advisory Committee to outline the "extent of global threats." Advisory Committee should discuss how to respond to this request from Congress. The Subcommittee on the Synthesis of Current Knowledge will address this issue.

***What can Advisory Committee say about this in its final report?**

9. International Issues (issue to be considered fully at later date)

How to address international aspects of problem?
What can we learn to add to what we are doing?

Preliminary and Partial List¹ of Potential Recommendations For Management and Mitigation

Mitigation Tools

1. The scientific merit and practicality of specific mitigation tools need to be evaluated on a case specific basis.
2. Generators of sound and regulators should cooperate to design and develop programs to evaluate mitigation tools that can be used in the field.
3. Develop innovative approaches to effective mitigation.
4. Encourage investment in broad-based and/or long-term mitigation solutions, keeping in mind practicality considerations and needs. For example,
 - source-based solutions like technological modifications that accomplish goal of activity with less effect on marine mammals;
 - information needed to address geographic areas of special concern;
 - coordination and integration of efforts to develop international and national data base of information re: marine mammals and acoustics.

Knowledge/Information/Research

5. Resource agencies should be given the task of, and resources for, researching risk to marine mammals. Need resources for long-term funding, for among other things, research into the effectiveness of mitigation measures, as well as for increased Agency staff and research funding.
6. Stock assessments should be improved in resolution and broadened in scope to better address the full range of anthropogenic effects.

Policy Issues

7. Adopt adaptive management when appropriate as a way of moving forward on management issues. [Strongly encourage that research efforts proceed to fill data gaps and improve and strengthen adaptive management approaches.]

¹ This list of potential recommendations is not endorsed by the full Subcommittee. It is a starting list that will be expanded as the subcommittee members continue to refine their draft report.

ATTACHMENT 1

Draft Language from Report of Subcommittee on Management and Mitigation

Precautionary Approach

Marine sciences, and especially the study of marine mammals, are subject to many uncertainties regarding the potential impacts of human activities on the marine environment. International treaties, agreements, and protocols, as well as domestic legislation in the United States deal with these uncertainties by calling for managers to take a *precautionary approach* to approving human activities that may affect the environment.

Managers taking a precautionary approach acknowledge the level of uncertainty that exists regarding the environmental impacts of a proposed activity and incorporate that uncertainty into their decision-making. Precautionary approaches place the presumption of demonstrating the potential level of impact on those proposing to take actions rather than on agencies to demonstrate that impacts may be likely.

Many legal scholars have attempted to define the precautionary approach in international treaties, without arriving at a single, agreed-upon definition. The U.S. Commission on Ocean Policy recently recommended that the United States adopt a precautionary approach which they defined as follows:

Precautionary Approach: To ensure the sustainability of ecosystems for the benefit of future as well as current generations, decision makers should follow a balanced precautionary approach, applying judicious and responsible management practices based on best available science and on proactive, rather than reactive, policies. Where threats of serious or irreversible damage exist, lack of full scientific certainty shall not be used as a justification for postponing action to prevent environmental degradation. Management plans and actions based on this precautionary approach should include scientific assessments, monitoring, mitigation measures to reduce environmental risk where needed, and periodic reviews of any restrictions and their scientific bases.

This working definition incorporates the generally accepted international terminology. The Commission on Ocean Policy elaborated further that "...scientific uncertainty – by itself – should neither prevent protective measures from being implemented nor prevent uses of the ocean..." (p. 36 of final prepublication report). Managers should assess uncertainties regarding proposed activities relative to their potential environmental impacts. When the uncertainties are low and likelihood of significant impacts are low, managers can clearly support the proposed activities with appropriate migration protocols in place. On the other hand, when uncertainties are high and potential for impacts are high, managers should not allow an activity without effective mitigation measures that reduce potential impacts.

A precautionary approach also involves a careful use of the scientific data that are available. For example, the concept of Potential Biological Removal in the MMPA defines acceptable levels of incidental mortality as considered precautionary in that it uses minimum population estimates to calculate the maximum number of animals that can be removed from the population without significantly affecting a population.

Domestic legislation such as the MMPA, ESA, and NEPA call for managers to take a precautionary approach to projects by assessing potential impacts. Notably, the MMPA prohibits takes, unless a federal agency authorizes it after the agency has concluded that the proposed activity will have a “negligible,” and not an “unmitigable adverse,” impact on a species or stock. This implies negligible impact must be demonstrated before the agencies authorize takes. The laws also require project proponents to obtain authorizations for activities that pose impacts to particular species and that agencies issuing the authorizations provide the public an opportunity to review and comment on the proposals. Furthermore, they call for agencies to require people proposing activities to mitigate potential impacts of those activities.